In the Claims:

The following is a list of claims currently pending in this application and their current status. This listing of claims replaces all prior versions and listings in this application.

1. - 47. (Cancelled)

48. (Previously presented) A method for establishing transactions among trading partners in a network, comprising:

       maintaining a registry of machine-readable specifications specifying business services offered by trading partners, the machine-readable specifications including at least one of definitions of, and references to definitions of, services offered and at least one of definitions of, and references to definitions of, documents to be exchanged with such services by trading partners; and

       providing, in response to a request, one or more of the machine-readable specifications from said registry via a communication network to a requesting node.

49. (Previously presented) The method of claim 48, wherein said machine-readable specifications comprise data identifying respective descriptions of sets of storage units and logical structures for the sets of storage units.

50. (Previously presented) The method of claim 49, wherein said machine-readable specifications included data adapted for parsing to identify an input document and one or more transactions which accept said input document.

51. (Previously presented) The method of claim 48, wherein the definitions of the documents to be exchanged comprise respective descriptions of sets of storage units and logical structures for the sets of storage units.

52. (Previously presented) The method of claim 48, wherein the machine-readable specifications include documents compliant with a definition of a predefined document including logical structures for storing an identifier of a particular transaction, and at least one of definitions and references to definitions of input and output documents for

the particular transaction.

53. (Previously presented) The method of claim 49, wherein the storage units comprise parsed data.

54. (Previously presented) A method for establishing transactions among trading partners in a network, comprising:

      maintaining a registry of machine-readable specifications specifying business services offered by trading partners, the machine-readable specifications including at least one of definitions of, and references to definitions of, services offered and at least one of definitions of, and references to definitions of, documents to be exchanged with such services by trading partners, wherein said machine-readable specifications comprise data identifying respective descriptions of sets of storage units and logical structures for the sets of storage units; and

      providing, in response to a request, one or more of the machine-readable specifications from said registry via a communication network to a requesting node,

      wherein the storage units comprise parsed data, and wherein the parsed data in at least one of the documents to be exchanged comprises:

            character data encoding text characters in the one of the input and output documents, and

            markup data identifying sets of storage units according to the logical structure of the one of the input and output documents.

55. (Previously presented) The method of claim 54, wherein at least one of the sets of storage units encodes a plurality of text characters providing a natural language word.

56. (Previously presented) The method of claim 54, wherein the specification includes interpretation information for at least one of the sets of storage units identified by the logical structure of at least one of the input and output documents, encoding respective definitions for sets of parsed characters.

57. (Previously presented) The method of claim 53, wherein the storage units comprise

unparsed data.

58. (Previously presented) The method of claim 48, including associating trading partners with said machine readable specifications.

59. (Previously presented) An apparatus used for establishing transactions among trading partners in a network, comprising:

> a network interface;

> memory storing data and programs of instructions, including a registry of machine-readable specifications specifying business services offered by trading partners, the machine-readable specifications including at least one of definitions of, and references to definitions of, services offered and at least one of definitions of, and references to definitions of, documents to be exchanged with such services by trading partners; and

> a data processor coupled to the memory and the network interface which executes programs of instructions; wherein the programs of instructions include

> logic to provide, in response to a request received at the network interface, one or more of the machine-readable specifications from said registry via a communication network to a requesting node.

60. (Previously presented) The apparatus of claim 59, wherein said machine-readable specifications comprise data identifying respective descriptions of sets of storage units and logical structures for the sets of storage units.

61. (Previously presented) The apparatus of claim 60, wherein said machine-readable specifications include data adapted for parsing to identify an input document and one or more transactions which accept said input document.

62. (Previously presented) The apparatus of claim 59, wherein the definitions of the documents to be exchanged comprise respective descriptions of sets of storage units and logical structures for the sets of storage units.

63. (Previously presented) The apparatus of claim 59, wherein the machine-readable specifications include documents compliant with a definition of a predefined document including logical structures for storing an identifier of a particular transaction, and at

least one of definitions and references to definitions of input and output documents for the particular transaction.

64. (Previously presented) The apparatus of claim 62, wherein the storage units comprise parsed data.

65. (Previously presented) An apparatus used for establishing transactions among trading partners in a network, comprising:

a network interface;

memory storing data and programs of instructions, including a registry of machine-readable specifications specifying business services offered by trading partners, the machine-readable specifications including at least one of definitions of, and references to definitions of, services offered and at least one of definitions of, and references to definitions of, documents to be exchanged with such services by trading partners, wherein the definitions of the documents to be exchanged comprise respective descriptions of sets of storage units and logical structures for the sets of storage units; and

a data processor coupled to the memory and the network interface which executes programs of instructions; wherein the programs of instructions include

logic to provide, in response to a request received at the network interface, one or more of the machine-readable specifications from said registry via a communication network to a requesting node;

wherein the storage units comprise parsed data, and the parsed data in at least one of the documents to be exchanged comprises:

character data encoding text characters in the one of the input and output documents, and

markup data identifying sets of storage units according to the logical structure of the one of the input and output documents.

66. (Previously presented) The apparatus of claim 65, wherein at least one of the sets of storage units encodes a plurality of text characters providing a natural language word.

67. (Previously presented) The apparatus of claim 65, wherein the specification includes interpretation information for at least one of the sets of storage units identified by the logical structure of at least one of the input and output documents, encoding respective definitions for sets of parsed characters.

68. (Previously presented) The apparatus of claim 64, wherein the storage units comprise unparsed data.

69. (Previously presented) The apparatus of claim 59, wherein the programs of instructions include logic to associate identifiers of trading partners with said machine-readable specifications.

70. (Previously presented) A method for executing transactions among nodes in a network, the network including a plurality of nodes which execute processes involved in the transactions, comprising:

> publishing through a communication network a machine-readable specification of an interface to an operation, the specification including a definition of an input document and a definition of an output document, the definitions of the input and output documents comprising respective descriptions of sets of storage units and logical structures for the sets of storage units;

> receiving data comprising an input document through the communication network;

> parsing the data according to the specification to identify the input document;

> providing at least a portion of the input document in a machine-readable format to a transaction process which produces an output;

> forming an output document, based on the specification and according to the definition of the output document; and

> transmitting the output document through the communication network.

71. (Previously presented) The method of claim 70, wherein said machine-readable specifications comprise data identifying respective descriptions of sets of storage units and logical structures for the sets of storage units.

72. (Previously presented) The method of claim 71, wherein said machine-readable specifications included data adapted for parsing to identify an input document and one or more transactions which accept said input document.

73. (Previously presented) The method of claim 70, wherein the definitions of the documents to be exchanged comprise respective descriptions of sets of storage units and logical structures for the sets of storage units.

74. (Previously presented) The method of claim 70, wherein the machine-readable specifications include documents compliant with a definition of a predefined document including logical structures for storing an identifier of a particular transaction, and at least one of definitions and references to definitions of input and output documents for the particular transaction.

75. (Previously presented) The method of claim 71, wherein the storage units comprise parsed data.

76. (Withdrawn)   A system for building parts of a transaction processor front end operating on a processing server and connecting one or more client computers via a network with at least one operation running on at least one backend processor, the system comprising:

a builder server, coupled to the network, for building a transaction processor front end module to run on a processing server;

wherein the builder server comprises:

(1) a design tool module that runs on the builder server that accepts directions from a terminal via the network, wherein the directions describe an operation to be carried out by the backend processor and the directions select or describe data maps of sets of units and logical structures of the sets of storage units for business documents to be used in input and output business documents for the operation;

(2) an interface definition builder module that runs on the builder server, which combines the description of the operation to be carried out by the backend processor with the data maps or pointers to the data maps for the input and output business documents to create an interface definition data structure that defines an interface to be made accessible to the client computers via the network;

(3) a compiler module that runs on the builder server and uses the data maps to:

(a) generate internal data object class definitions to be used by the transaction processor front end that provide access to data to be unmarshaled from the input business document and that carry data to be marshaled into the output document;

(b) manage a parser that analyzes the input business document and provides access to its content and logical structures; and

(c) assemble input and output translators to run on the processing server, wherein the input and output translators convert the input and output business document to and from internal data objects matching the internal data object class definitions and the input translator receives the content and the logical structures of the input document from the parser; and

(4) a publisher module that runs on the builder server that sends the interface definition data structure toward the client computers.

77. (Withdrawn)   The system of claim 76, further including at least one repository server that stores data maps of reusable business documents, wherein the design tool module accepts directions from the terminal that access the repository server and combine at least one of the reusable business documents with the descriptions of the sets of units and logical structures of the sets of units to form at least one of the input or output document.

78. (Withdrawn)   The system of claim 76, further including at least one repository server that stores reusable semantic components, wherein the design tool module accepts directions from the terminal that access the repository server and combines at least one of the reusable semantic components with the descriptions of the sets of units and logical structures of the sets of units to form at least one of the input or output document.

79. (Withdrawn)   The system of claim 76, further including a repository stored on a repository storage means accessible by the builder server, and wherein the design tool module accesses elements to be used in the operation interface specification from the

repository, the repository storing a library of logical structures, and interpretation information for logic structures used to build operation interface specifications.

80. (Withdrawn)   The system of claim 76, wherein the description of the operation includes a title and synopsis of the operation.

81. (Withdrawn)   The system of claim 76, wherein the publisher module sends the interface definition data structure toward the client computers by causing the interface definition data structure to be published on at least one repository server that is accessible to the client computers.

82. (Withdrawn)   The system of claim 76, further including in the interface definition data structure interpretation information or pointers to interpretation information for the logical structures of the input and output documents.

83. (Withdrawn)   A system for building parts of a consuming service module operating on a consuming device that accesses a provider service operating on a processing server, the system comprising:

a builder server for building a consuming service module to run on a consuming device;

at least one directory server that stores data maps or pointers to data maps of sets of storage units and logical structures of the sets of storage units for business documents that have been combined to build a provider service interface data structure that defines an interface that is accessible to the consuming devices via the network;

wherein the builder server comprises:

(1) a design tool module that runs on the builder server that accepts directions via the network from a terminal, wherein the directions select an operation to be carried out on a processing server and retrieve from or by accessing the directory server the data maps of input and output business documents included in the provider service interface data structure;

(2) a complementary compiler module that runs on the builder server that uses the data maps retrieved to:

(a) generate internal data object class definitions to be used by the consuming service that carry data to be marshaled into the input

document and that provide access to data to be unmarshaled from the output business document;

(b) manage a parser that analyzes the output business document from the provider service and that provides access to its content and logical structures; and

(c) assemble input and output translators to run on the consuming device, wherein the input and output translators convert internal data objects matching the internal data object class definitions to and from the input and output business documents and the input translator receives the content and the logical structures of the output business document from the parser.

84. (Previously presented) A method of executing operations requested by a consuming service running on a consuming server via a network, comprising

exposing to at least one consuming service via a network an operation interface running on a providing server, the operation interface providing access to an operation running on a processing server and,

wherein the operation interface implements an interface definition stored in an operation interface definition data structure on an interface storage means and the interface definition data structure includes definitions of input and output business documents, and the definitions include respective descriptions of sets of storage units and logical structures for the sets of storage units;

receiving at the providing server via the network an input business document from the consuming server;

parsing at the providing server the input business document according to the definition of the input business document to provide access to its content and logical structure and translating at least part of the parsed input business document into an internal input data object;

sending from the providing server to the operation running on the processing server the internal input data object; and

transmitting via the network an output business document that conforms to the definition of the output business document to the consuming server.

85. (Previously presented)The method of claim 84, further including:

      the providing server receiving back an internal output data object from the processing server; and

      translating at the providing server the internal output data object into the output business document that is transmitted to the consuming server.

86. (Previously presented) The method of claim 84, wherein the input and output business documents conform to a standard Extensible Markup Language XML format.

87. (Previously presented)The method of claim 84, wherein the storage units comprise parsed data.

88. (Previously presented)The method of claim 87, wherein the parsed data in at least one of the input and output business documents comprises:

      character data encoding text characters in the one of the input and output business documents; and

      markup data identifying sets of storage units according to the logical structure of the one of the input and output documents.

89. (Previously presented) A method of causing operations to be executed responsive to a request from a consuming service running on a consuming server to an operation interface of a providing server via a network, wherein the operation interface implements an operation interface definition stored in an operation interface definition data structure on an interface storage means and the interface definition data structure includes definitions of input and output business documents, and the definitions include respective descriptions of sets of storage units and logical structures for the sets of storage units, the method comprising:

      marshalling data on the consuming server from a first internal data object into an input business document that conforms to the operation interface definition of the input business document;

      sending the input business document from the consuming server to the providing server via the network;

receiving from the providing server at the consuming server an output business document that conforms to the operation interface definition of the output business document;

parsing at the consuming server the output business document according to the definition of the output business document to provide access to its content and logical structure and translating at least part of the parsed output business document into a second internal data object.

90. (Withdrawn)   A method for routing input business document received from client computers via a network to one or more operations running on processing servers, the method including:

storing on interface storage means a plurality of operation interface specification data structures that include operation interface specifications, the operation interface specifications including include descriptions of operations and definitions of input and output documents, the definitions of the input and output business documents comprising respective descriptions of sets of storage units and logical structures for the sets of storage units;

receiving data comprising a document at a server from a client computer via a network;

parsing at the server the document according to the operation interface specifications to identify an input business document and identifying one or more operations that run on one or more processing servers, which accept the identified input business document; and

routing at least a portion of the input business document from the server to the one or more operations running on the processing servers, which accept the identified input business document.

91. (Withdrawn)   A system for routing documents including a transaction processor front end operating on a processing server and connecting one or more client computers via a network with at least one operation running on at least one backend processor, the system including:

a plurality of operation interface specification data structures stored on an interface storage means, including operation interface specifications, the operation interface specifications including descriptions of operations and definitions of input and output documents, the definitions of the input and output business documents comprising respective descriptions of sets of storage units and logical structures for the sets of storage units; and

the transaction processor front end running on the processor server coupled to the interface storage means, comprising

a network interface that accepts a document via the network from a client computer;

a parser running on the processor server that analyzes the document according to the operation interface specifications, identifies an input business document and identifies one or more operations that run on one or more processing servers, which accept the identified input business document; and

a document router running on the processor server that routes at least a portion of the input business document from the processor server to the one or more operations running on the backend servers, which accept the identified input business document.